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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SINGH, RAMNANDAN P

ART UNIT

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2614

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<div style="border: 1px solid black; width: 150px; height: 20px; margin-bottom: 5px;"></div> <b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/750,420	ZHOU, YAN	
	Examiner	Art Unit	
	Ramnandan Singh	2614	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☒ Claim(s) 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>Oct. 09, 2006</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claim 6 is objected to because of the following informalities:

Claim 6 recites the limitation "downstream data signal to the second driver" in line 3. This is in error. Replace the term "second driver" with the term "first driver".

Appropriate correction is required.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this

application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-23 provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-22 of copending Application No. 10/750421. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of the instant application: "A subscriber line interface circuit apparatus, comprising: a first driver for driving a downstream data signal in a non-voiceband range onto a subscriber line; a second driver for driving a downstream voice signal in a voiceband range onto the subscriber line; and receiver circuitry coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line, wherein the first driver and receiver circuitry reside on a same first integrated circuit die" is a broader version of claim 1 of co-pending Application No. 10/750421. Thus both the instant application and the co-pending application are claiming the same subject matter.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art (APA) [ Fig. 4B; Specification, Page 12, lines 3-27].

Regarding claim 1, APA teaches a subscriber line interface circuit apparatus (452) shown in Fig. 4B, comprising:

a first driver (442) for driving a downstream data signal in a non-voiceband range onto a subscriber line [Fig. 4B];

a second driver (432) for driving a downstream voice signal in a voiceband range onto the subscriber line [Fig. 4B]; and

receiver circuitry (450) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line [Applicant's specification, Page 12, lines 3-27; Fig. 4B].

Further, since implementing the SLIC or any combinations of its components into an integrated circuit is well-known in the art, such as the APA teaches integrating POTS and xDSL services into a single linecard (452) [Fig. 4B], it would have been obvious to a person of ordinary skill in the art at the time the invention was made to make a design choice to select one of the various combinations of the first driver, the second drive, and the receiver circuitry to implement in one or multiple integrated circuits including the first driver and receiver circuitry on a same integrated circuit die, and the second driver as discrete components.

6. Claims 2-8, 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over the APA as applied to claim 1 above, and further in view of Anderson et al [US 6,990,191 B2].

Regarding claim 2, the APA does not teach expressly a low pass filter. No details of the drivers and the receiver circuitry are shown in Fig. 4B. So one of ordinary skill in the art would have been motivated to seek any known circuitry suitable that can function as the drivers and the receive circuitry, such as, Anderson et al.

Anderson et al teaches an apparatus comprising: an upstream low pass filter providing a low pass filtered upstream signal as an upstream voice signal [Figs. 1-2; col. 3, line 64 to col. 4, line 46].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teachings of Anderson et al with the APA in order to obtain more details about the drivers and the receiver circuitry to implement the claimed invention of the APA.

Regarding claim 3, the limitations are shown above.

Regarding claim 4, Anderson et al further teach the apparatus,

wherein the voiceband range is from approximately 0 Hz to 4 kHz that includes the claimed limitation [col. 2, lines 15-19].

Regarding claim 5, Anderson et al further teach the apparatus comprising: an upstream high pass filter providing a high pass filtered upstream signal as an upstream data signal, wherein the upstream high pass filter resides on the first integrated circuit die [Fig. 2; col. 3, line 65 to col. 4, line 18; col. 8, lines 42-56].

Regarding claim 6, the limitations are shown above.

Regarding claim 7, Anderson et al further teach the apparatus, wherein the second driver further drives a metering signal onto the subscriber line [Fig. 2; col. 5, lines 18-45; col. 7, lines 42-52].

Regarding claim 8, Anderson et al further teach the apparatus comprising: a metering signal cancellation circuit residing on the first integrated circuit die, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice



signal [col. 6, lines 4-21; col. 7, lines 42-63].

Regarding claim 11, Anderson et al further teach the apparatus, wherein a lower bound of the non-voiceband range is greater than 16 kHz [col. 2, lines 19-28].

Regarding claim 12, Anderson et al further teach the apparatus, wherein the downstream data signal is a discrete multi-tone encoded signal (i.e. ADSL signal) [col. 2, lines 19-27; col. 4, lines 19-33].

7. Claims 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the APA and Anderson et al as applied to claims 7 and 19 above, and further in view of Booth et al [US 5,835,533].

Regarding claim 9, although Anderson et al teach a metering signal cancellation circuit using a single-pole low pass filter [col. 6, lines 4-21], they do not teach expressly employing a finite-impulse response (FIR) filter to cancel the metering signal.

Booth et al teach a metering signal cancellation circuit (i.e. adaptive filter) shown in Fig. 7, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice signal and the metering signal cancellation circuit further comprises a finite impulse response filter responsive to the metering signal provided to the driver circuitry [Fig. 7; col. 1, lines 11-49; col. 7, lines 21-55].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Booth et al with the combination of the APA and Anderson et al in order to accommodate signals in the upstream direction so that the network can then serve for communication metering signals [Booth et al; col. 1, lines 29-35].

Claim 20 is essentially similar to claim 9 and is rejected for the reasons stated above.

8. Claims 13-19, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's Admitted Prior Art (APA) [ Fig. 4B;

Specification, Page 12, lines 3-27] in view of Anderson et al [US 6,990,191 B2].

Regarding claim 13, APA teaches a subscriber line interface circuit apparatus (452) shown in Fig. 4B, comprising:

a first driver (442) for driving a downstream data signal in a non-voiceband range onto a subscriber line [Fig. 4B];

a second driver (432) for driving a downstream voice signal in a voiceband range onto the subscriber line [Fig. 4B]; and

receiver circuitry (450) coupled to provide an upstream data signal and an upstream voice signal from an upstream signal carried by the subscriber line [Applicant's specification, Page 12, lines 3-27; Fig. 4B].

However, the APA does not teach expressly injecting a metering signal into a downstream voice signal.

Anderson et al teach injecting a metering signal into a downstream voice signal [Fig. 2; col. 5, lines 18-45; col. 7, lines 42-52].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine Anderson et al with APA in order to provide a metering signal to continuously notify a customer of telephone charges, etc.

Further, since implementing the SLIC or any combinations of its components into an integrated circuit is well-known in the art, such as the APA teaches integrating POTS and xDSL services into a single linecard (452) [Fig. 4B], it would have been obvious to a person of ordinary skill in the art at the time the invention was made to make a design choice to implement the various combinations of the first driver, the second drive, and the receiver circuitry in one or multiple integrated circuits including the first driver circuitry and receiver circuitry on a same integrated circuit die exclusive of the second driver circuitry.

Regarding claim 21, APA further teach the apparatus, wherein the receiver circuitry comprises a first upstream driver coupled to receive the upstream signal (not shown).

Regarding claim 14, Anderson et al further teach the apparatus, wherein the voice signal resides in a voiceband range of 0 Hz to 4 kHz [col. 2, lines 15-19].

Regarding claim 15, Anderson et al further teach the apparatus, wherein the upstream and downstream data signals reside in a non-voiceband range greater than 25 kHz [col. 2, lines 19-28].

Regarding claim 16, Anderson et al further teach the apparatus, wherein the upstream and downstream data signals are discrete multi-tone encoded data signals (i.e. ADSL signal) [col. 2, lines 19-27; col. 4, lines 19-33].

Regarding claim 17, Anderson et al further teach the apparatus comprising: an upstream low pass filter providing a low pass filtered upstream signal as an upstream voice signal, wherein the upstream low pass filter resides on the first integrated circuit die [Fig. 2; col. 3, line 65 to col. 4, line 18; col. 8, lines 42-56].

Regarding claim 18, the limitations are shown above.

Regarding claim 19, Anderson et al further teach the apparatus comprising: a metering signal cancellation circuit residing on the first integrated circuit die, wherein the metering signal cancellation circuit substantially cancels any metering signal present in the upstream voice signal [col. 6, lines 4-21; col. 7, lines 42-63].

9. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the APA and Anderson et al as applied to claim 21 above, and further in view of Gambuzza [US 6,226,331 B1].

Regarding claim 22, the combination of the APA and Anderson et al does not teach expressly the apparatus, wherein the first upstream driver is capacitor-coupled to the subscriber line.

Gambuzza teaches the apparatus shown in Fig. 4, wherein the first upstream driver is capacitor-coupled to the subscriber line [Fig. 4; col. 7,

line 15 to col. 8, line 7]. It is nevertheless a teaching to one of ordinary skill in the art.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Gambuzza with the combination of the APA and Anderson et al as in order to provide galvanic isolation between data communications equipment and a digital subscriber line (DSL) [Gambuzza; col. 1, lines 19-24].

Regarding claim 23, Gambuzza teaches the apparatus, wherein the first upstream driver (220) shown in Fig. 2 is transformer-coupled to the subscriber line [Fig. 2 ].

***Allowable Subject Matter***

10. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and overcoming the double patenting rejection, as set forth in this Office action.

Claim 10 recites "wherein the downstream voice signal and the metering signal are weight coupled to the second driver wherein the weights permit varying the proportion of combination of the downstream voice and metering signals". The prior art of record does not teach this limitation.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hein et al [US 6,934,384 B1] teach subscriber line interface circuitry (SLIC) to exercise various options to implement the SLIC into an integrated circuit [Figs. 5(A) thru 5(D)].

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. The



fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ramnandan Singh  
Examiner  
Art Unit 2614

A handwritten signature in black ink, appearing to read 'R. Singh', written over a horizontal line.